IN THE CLAIMS:

1. (Currently amended) A method for repairing a coated component, which has been exposed to engine operation, to restore coated dimensions of the component and increase subsequent engine operation efficiency, comprising:

a) providing an engine run component including a base metal substrate having thereon a thermal barrier coating system, the thermal barrier coating system comprising a bond coat on the base metal substrate and a top ceramic thermal barrier coating, the top ceramic thermal barrier coating having a nominal thickness t;

b) removing completely the thermal barrier coating system, wherein a portion of the base metal substrate also is removed, and determining thickness of the base metal substrate removed, the portion of the base metal substrate removed having a thickness, Δt;

c) reapplying a bond coat to the substrate at a thickness which is about the same as the thickness applied prior to the engine operation;

d) reapplying a top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t$, wherein Δt compensates for the portion of base metal substrate removed in b), and the dimensions of the coated component are restored to about the coated dimensions preceding the engine run to increase subsequent engine operation efficiency.

2. (Original) The method of claim 1, wherein the engine run component is a high pressure turbine blade, and coated airfoil contour dimensions of the coated component are restored.

3. (Original) The method of claim 1 further comprising the step of weighing the component after step c) and calculating Δt to be applied in step d).

4. (Original) The method of claim 1, wherein t is between about 3 mils and about 10 mils, and Δt is at least about 1 mil.

5. (Original) The method of claim 1, wherein the bond coat of a) and c) comprises a diffusion aluminide coating.

6. (Original) The method of claim 5, wherein the diffusion aluminide coating is a simple aluminide or a modified aluminide.

7. (Original) The method of claim 1, wherein the base metal substrate is a nickel-based single crystal superalloy.

8. (Original) The method of claim 1, wherein the base metal substrate is a nickel-based directionally solidified superalloy.

9. (Original) The method of claim 5, wherein the diffusion aluminide coating is a modified aluminide coating comprising a metal selected from the group consisting of Pt, Rh and Pd.

10. (Original) The method of claim 5, wherein the diffusion aluminide coating further comprising reactive elements.

11. (Original) The method of claim 1, wherein the ceramic thermal barrier coating comprising yttria stabilized with zirconia.

12. (Original) The method of claim 1, wherein the bond coat of a) and c) comprises a MCrAlY coating.

13. (Currently amended) A method for repairing a coated high pressure turbine blade, which has been exposed to engine operation, to restore airfoil contour dimensions of the blade comprising:

a) providing an engine run high pressure turbine blade including a base metal substrate made of a nickel-based alloy having thereon a thermal barrier coating system, the thermal barrier coating system comprising a diffusion bond coat on the base metal substrate and a top ceramic thermal barrier coating comprising a yttria stabilized zirconia material, the top ceramic thermal barrier coating having a nominal thickness t;

b) removing completely the thermal barrier coating system, wherein a portion of the base metal substrate also is removed, and determining thickness of the base metal

substrate removed, the portion of the base metal substrate removed having a thickness, Δt;

c) reapplying the diffusion bond coat to the substrate, wherein the bond coat is reapplied to a thickness, which is about the same as applied prior to the engine operation;

d) reapplying the top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t$, wherein Δt compensates for the portion of base metal substrate removed in b), and the coated airfoil contour dimensions are restored to about the coated dimensions preceding the engine run.

14. (Original) The method of claim 13, wherein the nickel-based alloy has a density of about 8.64 g/cm^3.

15. (Original) The method of claim 13, wherein the yttria stabilized zirconia material has a density of about 4.7 g/cm^3.

16. (Original) The method of claim 1, wherein the component is an airfoil.

17. (Original) The method of claim 1, wherein the component is a static component.

18. (Original) The method of claim 17, wherein the static component is a vane.

19. (Currently amended) A method for repairing a coated component, which has been exposed to engine operation, to restore coated airfoil contour dimensions of the component comprising:

a) providing an engine run component including a base metal substrate made of a nickel-based alloy having thereon a thermal barrier coating system, the thermal barrier coating system comprising a diffusion bond coat on the base metal substrate and a top ceramic thermal barrier coating comprising a yttria stabilized zirconia material, the top ceramic thermal barrier coating having a nominal thickness t;

b) inspecting the component;

c) removing completely the thermal barrier coating system by stripping, wherein a portion of the base metal substrate also is removed, the portion of the base metal substrate removed having a thickness, Δt;

d) reapplying the diffusion bond coat to the substrate, wherein the bond coat is reapplied to a thickness, which is about the same as applied prior to the engine operation,

followed by weighing the component to calculate Δt; and

e) reapplying the top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t$, wherein Δt compensates for the portion of base metal substrate removed in b), and the airfoil contour dimensions of the coated component are restored to about the coated dimensions preceding the engine run.